US Army Corps of Engineers®
Engineer Research and Development Center

BuckEye Fact Sheet
An Airborne High-Resolution Geospatial Collection System

Background: The BuckEye system was born in 2004 out of the need for high-resolution geospatial data that can be applied to numerous tactical missions. BuckEye began as a helicopter-mounted digital color camera system capable of producing high-resolution imagery for intelligence, surveillance and reconnaissance (ISR) and change detection/battle damage assessment missions.

In November 2005, a new BuckEye system was deployed to Iraq on a fixed-wing aircraft to concentrate on the urban mapping mission. In addition to a digital color camera, this new system included a Light Detection and Ranging (LIDAR) sensor to collect high-resolution, high-accuracy elevation data. LIDAR elevation data supports improved battlefield visualization, line of sight analysis, and urban warfare planning. Because of its 3-dimensional accuracy, LIDAR also supports the ortho-rectification of imagery, making it more accurate as well. Once imagery is ortho-rectified, individual frames can be combined into large mosaics.

In May 2006, an additional helicopter-mounted camera system was deployed to Afghanistan to conduct ISR missions in support of Operation Enduring Freedom.

Current Operations: BuckEye systems have been supporting Operation Iraqi Freedom for more than two years. The helicopter-mounted camera systems are imbedded at the Brigade level, giving that ground commander the ability to employ the BuckEye to best support tactical operations. These missions include ISR in support of mission planning, rehearsal, and execution.

The BuckEye Imagery/LIDAR system in Iraq is centrally-controlled to support the entire theater. It has collected over 12,000 square kilometers of data, primarily over urban areas, but also along main supply routes. This revolutionary data set includes over 400 tiles of LIDAR elevation data at 1-meter resolution that now covers most Iraqi cities. The imagery system has collected over 400,000 individual color images at 10 to 15-centimeter resolution. The color image frames can be made available quickly to support tactical operations. They are also being methodically ortho-rectified and turned into mapping-quality image mosaics with stunning detail. All of the BuckEye products are unclassified, so they can be carried into the field with combat soldiers.

TEC has worked hard to make Buckeye data readily available to our fighting forces and supporting agencies. Data is both pushed to requesting units on DVD, and made available on all Department of Defense networks. As soon as collected imagery is received at TEC, it is indexed and made available as downloadable image files. LIDAR is processed quickly into gridded tiles and posted to the networks. Imagery ortho-mosaics are posted as they are completed and quality checked. Other products available on-line include image files as GeoPDF's, data through ArcIMS services, 3D Fly-Through's, and high-resolution Urban Tactical Planner.

BuckEye Color Imagery

BuckEye Change Detection

BuckEye LIDAR elevation model

Future Developments: TEC is working to integrate the LIDAR and Imagery sensors into one BuckEye system that can operate on a variety of platforms, both manned and unmanned, and continues to support current operations in OIF and OEF.

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